

BAYKOV, S.P., kand. tekhn. nauk; BELENKO, I.S., kand. tekhn. nauk;
 BELKOV, S.F., inzh.; BELYANCHIKOV, M.P., inzh.; BERNSTEYN,
 I.L., inzh.; BOGORODITSKIY, D.D., inzh.; BOLONOVA, Ye.V.,
 kand. tekhn. nauk; BROZGOL', I.M., kand. tekhn. nauk;
 VLADIMIROV, V.B., inzh.; VOLKOV, P.D., kand. tekhn. nauk;
 GERASIMOVA, N.N., inzh.; ZHUKHOVITSKIY, A.F., inzh.;
 KABANOV, M.F., inzh.; KAMEVTSOV, V.M., kand. tekhn. nauk;
 KOLOTEVNIKOV, I.V., inzh.; KONDRAT'YEV, I.M., inzh.;
 KUZNETSOV, I.P., kand. tekhn. nauk; L'VOV, D.S., kand.
 tekhn. nauk; LYSENKO, I.Ya., kand. tekhn. nauk; MAKAROV,
 L.M., inzh.; CLEYNIK, N.D., inzh.; RABINER, Ye.G., inzh.;
 ROZHDESTVENSKIY, Yu.L., kand. tekhn. nauk; SAKHON'KO, I.M.,
 kand. tekhn. nauk; SIDOROV, P.N., inzh.; SPITSYN, N.A., prof.,
 doktor tekhn. nauk; SPRISHEVSKIY, A.I., kand. tekhn. nauk;
 CHIRIKOV, V.T., kand. tekhn. nauk; SHEYN, A.S., kand. tekhn.
 nauk; NIBERG, N.Ya., nauchnyy red.; BLAGOSKLONOVA, N.Yu., inzh.,
 red. izd-va; SOKOLOVA, T.F., tekhn. red.

[Antifriction bearings; manual] Podshipniki kachenila; spra-
 vochnoe posobie. Moskva, Gos. nauchno-tekhn. izd-vo mashino-
 stroit. lit-ry, 1961. 828 p. (MIRA 15:2)
 (Bearings (Machinery))

L 22151-65 EPF(c)/EPR/EWT(d)/EWT(m)/T/EWA(d)/EWP(w) Pr-l/Pr-l AEDC(a)/ASDF-3
EM/DJ

ACCESSION NR: AR4045074

S/0277/64/000/005/0036/0036

SOURCE: Ref. zh. Mashinostr. mat., konstr. i raschet detal. mash. Otd. vy*p., Abs. 5.48.257

AUTHOR: Spitsy*n, N. A.; Narodetskiy, M. Z.; Ly*senko, I. Ya. B

TITLE: New developments in the theory of calculating roller-contact bearings

CITED SOURCE: Tr. Vses. n.-i. konstrukt.-tekhnol. in-ta podshipnik. 17
prom-sti, no. 3(35), 1963, 11-30

TOPIC TAGS: roller contact bearing, antifriction bearing, bearing theory, elasticity theory, radial ball thrust bearing, bearing load capacity, radial gap

TRANSLATION: The article presents a survey of studies, mainly by Soviet authors, on the theory of calculation of roller contact bearings, which include the formulation of contact problems in the theory of elasticity. Subjects discussed include methods for solving problems in the theory of elasticity relating to

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ACCESSION NR: AR4045074

bearing design, analysis of effects of radial gaps on load capacity and life of roller contact bearings, analysis of dynamic and kinematic characteristics of various types of antifriction bearings, design principles for high speed bearings, theoretical principles of calculating preset roll gap and regulating the end play of radial ball thrust bearings, as well as an evaluation of the comparative load capacity of various types of bearings.

SUB CODE: IE

ENCL: 00

Card 2/2

SPITSYN, N.A., doktor tekhn.nauk, prof.

Nonskidding belt drive. Vest.mashinostr. 43 no.2:40-42
F 163. (MIRA 16:3)
(Belts and belting)

L 16308-65 EWT(m)/EPF(c)/EPR/T Pr-l/Ps-l DJ
 ACCESSION NR: AP5002055 S/0122/64/000/009/0030/0035

AUTHOR: Spitsyn, N. A. (Doctor of technical sciences, Professor)

TITLE: High speed bearings B

SOURCE: Vestnik mashinostroyeniya, no. 9, 1964, 30-35

TOPIC TAGS: lubrication, antifriction bearing 1

Abstract: High speed bearings are defined as those which operate at a number of revolutions n exceeding values given by the parameter $dn = 300,000$ mm -rev/min, where d is the diameter of the opening of the bearing in mm. The design of a large variety of high speed bearings is presented. A list of six critical factors in the design of high speed bearings is given as well as criteria for determining the limiting speed of the bearings. A table is given showing the various methods of lubricating bearings of different sizes and speeds. The results of tests run on five different bearings are discussed. Orig. art. has 4 figures and 4 tables.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

JPRS

Card 1/1

L 36225-65 EWT(d)/EWT(m)/EPF(c)/EWP(c)/EWP(v)/EPR/T/EWP(k)/EWP(l) pf-4/pr-4/ps-4
 ACCESSION NR: AP5010287 DJ UR/0286/64/000/014/0064/0064 36

AUTHOR: Spitsyn, N. A.; Tsypliyanova, N. S.; Gorshenev, M. A.; Lieberman, B. Ya.; Rysovets, G. G. B

TITLE: Method for checking antifriction bearings on a stand for limiting speed.
 Class 42, No. 164155

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1964, 64

TOPIC TAGS: antifriction bearing, test chamber

Translation: A method for checking antifriction bearings on a stand for limiting speed in a testing machine with mechanical or hydraulic loading and temporally stable lubricating conditions. In order to cut down on the length of time and the labor spent in testing, the test is carried out on one and the same small lot of bearings, for example ten units, which operate at speeds which are increased by steps. They are tested for no less than twenty-four hours each until there is an average rise in temperature of 40-50° above the ambient temperature.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy konstruktorsko-tekhnologicheskii institut podshipnikovoy promyshlennosti (All-Union Scientific Research Design and Technological Institute of the Bearing Industry)

SUBMITTED: 29Oct62

ENCL: 00

SUB CODE: IE

Card 1/1 NO REF SOV: 000

OTHER: 000

JPES

L 06321-67 EWP(j)/EWT(m) IJP(c) RM/DJ

ACC NR: AR6004034

SOURCE CODE: UR/0277/65/000'009/0042/0043

AUTHORS: Spitsyn, N. A.; Atras, S. G.; Tazhibayev, S. D.

36

TITLE: Ball bearings which work without lubrication at higher speeds

13

SOURCE: Ref. zh. Mashinostroitel'nyye materialy, konstruktsii i raschet detaley mashin. Gidropriwod, Abs. 9.48.357

REF SOURCE: Tr. Vses. n.-i. konstrukt.-tekhnol. in-ta podshipnik, prom-sti, v. 3(39), 1964, 66-74

TOPIC TAGS: self lubricating bearing, ball bearing, solid lubricant, teflon

ABSTRACT: Based on the work of Soviet and foreign authors developing self-lubricating ball bearings and on the experimental work performed at MIEM, the following conclusions are reached. Ball bearings with massive separators made of teflon and a special lubricant are acceptable for unlubricated operation under atmospheric conditions at normal temperatures. They provide a useful life of 100 and more hours at a speed parameter of $\frac{d}{2} n \leq 40\ 000$ mm/rev/min. Lubrication is provided by gradual wearing of the separator. Characteristics of a failing unlubricated bearing are increased noise during operation and a rapid rise in operating temperature, measured on the outer rings (by 10-15C or more), which is due to destruction of the

Card 1/2

UDC: 621.822.7.001.5

LIEBERMAN, B.Ya.; SPITSYN, N.A., doktor tekhn. nauk, prof.,
retsenzent

[Machines for testing antifriction bearings] Mashiny dlia
ispytaniia podshipnikov kacheniia. Moskva, Mashinostroenie,
1965. 151 p. (MIRA 18:3)

SHCHERBATYEV, N.V.; SPITSYN, N.A.

Mapping the distribution and abundance of a species at the border of its range [the red-backed bank vole (*Clethrionomys glareolus*) in the lower Volga Valley]. Zool. zhur. 44 no.18:142-145 '65.
(MIRA 18:4)

1. Bereznaya protivochumnaya laboratoriya Privolzhskoy zheleznoy dorogi, Saratov i Volgogradskaya oblastnaya sanitarno-epidemiologicheskaya stantsiya.

L 3565-66 EWT(m)/EWP(w)/EPF(c)/EWA(d)/EWP(j)/T/EWP(t)/EWP(z)/EWP(b)/ETC(m)

ACCESSION NR: AT5022677 MJW/JD/WH/DJ/GS/RM

UR/0000/65/000/000/0240/0243

AUTHOR: Spitsyn, N. A.

TITLE: Friction and wear in high speed ball bearing separators

SOURCE: AN SSSR. Nauchnyy sovet po treniyu i smazkam. Teoriya treniya i iznosa (Theory of friction and wear). Moscow, Izd-vo Nauka, 1965, 240-243

TOPIC TAGS: ball bearing friction, ball bearing wear, bearing separator/ BrAZhMts 10 3 1.5 bronze alloy, BrAZhN 10 4 4 bronze alloy, No. 36205 ball bearing

ABSTRACT: The friction and wear of high speed ($d_{cp} n > 1\ 600\ 000\ \text{mm rev/min}$) ball bearing separators are discussed. The gyroscopic torque of the ball is given as

$$M_g = 1,15 \cdot 10^{-10} d_p n^2 d_b^4 \sin \beta$$

which requires an axial load of

$$A/d_b \geq 1,15 \cdot 10^{-10} d_p n^2 d_b \sin^3 \beta$$

to damp out the gyroscopic rotation of the ball (where d_b = ball diameter). It was found that the maximum force on the separator does not exceed

$$P_{\max} \approx 2Q_0 f$$

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ACCESSION NR: AT5022677

(see Fig. 1 on the Enclosure) and that the wear pattern on the separator can be decreased by more accurate sizing of balls and slight length increase of the ball nest. In thrust and radial-thrust bearings at high speeds the centrifugal force

$$F = 2,28 \cdot 10^{-10} \left(\frac{d_{cp} - d_b \cos \beta}{2d_{cp}} \right)^2 d_{cp} n^2 d_b^3$$

on the separator cross-connectors can be substantial, particularly if the ball nests are of insufficient size. In unlubricated ball bearings teflon and self-lubricating material separators have been found effective (for example, ball bearings No. 36205 at a load of 8-10 kg and 8500 rpm were found to have a life of 300 hours, using teflon separators). Tests performed at VNIIP with a variety of materials at speeds of $d_{cp} = 1\,425\,000 - 1\,814\,000$ mm rev/min have shown that

BrAZhMts 10-3-1.5 separators with steel connectors are best for single-row radial ball bearings, while BrAZhN 10-4-4 separators are best for three-point radial-thrust bearings (see Fig. 2 a and b respectively on the Enclosure). Orig. art. has: 2 figures and 1 table.

ASSOCIATION: Nauchnyy sovet po treniyu i smazkam, AN SSSR (Scientific Committee on Friction and Lubrication, AN SSSR) 44, 5

SUBMITTED: 18 May 65

ENCL: 02

SUB CODE: IE

NO REF SOV: 000

OTHER: 000

Card 2/4

L 3565-66
ACCESSION NR: AT5022677

ENCLOSURE: 01

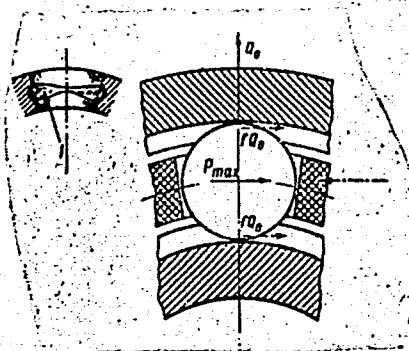


Fig. 1.
Wear and friction forces on separator (I - wear pattern)

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L 3565-66

ACCESSION NR: AT5022677

ENCLOSURE: 02,

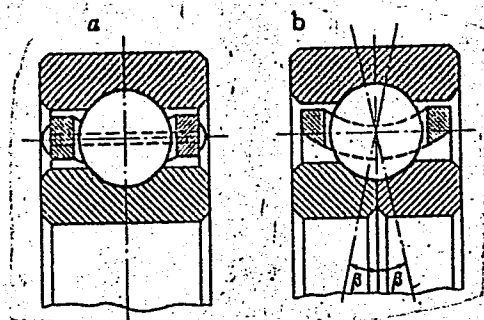


Fig. 2.
Ball bearing construction: a- single-row bearing; b- three-point radial-thrust bearing

Bearing Alloys 18

mlr
Card 4/4

SPITSYN, N. I.

Department of chemistry. Trudy MGRI no.26:60-62 '54. (MLRA 8:12)
(Chemistry--Study and teaching)

LAPTEV, Fedor Fedorovich; SPITSYN, N.I., redaktor; SERGEYEVA, N.A.
redaktor; POPOV, N.D., tekhnicheskiy redaktor

[Water analysis] Analiz vody. Pod red. N.I. Spitsyna. Moskva
Gos.nauchno-tekhn.izd-vo lit-ry po geologii i okhrane nedr.
1955. 143 p. (MLRA 8:10)
(Water--Analysis)

AL'TOVSKIY, M.Ye.; CHAPOVSKIY, Ye.G.; BABUSHKIN, V.D.; BINDEMAN,
N.N.; LAPTEV, F.F.[deceased]; SOKOLOV, I.Yu.; CHALISHCHEV,
A.M.[deceased]; PROKHOROV, S.P.; TOKAREV, A.N.; KOROTIYEV,
A.P.; ABRAMOV, S.K.; KONOPLYANTSEV, A.A., red.; PRIKLONSKIY, V.A.,
red. deceased]; SPITSYN, N.I., red.; MARINOV, N.A., red.;
KULICHIKHIN, N.I., red.; GARMONOV, I.V., red.; LYUBCHENKO, Ye.K.,
red. izd-va; POTAPOV, V.S., red. izd-va; GUROVA, O.A., tekhn.
red.

[Hydrogeologist's handbook] Spravochnik gidrogeologa. Pod ob-
shchey red. M.E.Al'tovskogo. Moskva, osteoltekhizdat, 1962.
615 p. (MIRA 15:7)

(Water, Underground)

1. SPITSEN, P. D., Eng.
2. USSR (600)
4. Shaft Sinking
7. Determining the depth of blast hole in skinning vertical mine shafts. Ugol' 28, No. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

L 59283-65 EWT(m)/EPF(n)-2/EWP(t)/ENP(b) Pu-4 IJP(c) JD/JG

ACCESSION NR: AP5015568

UR/0153/65/008/002/0203/0207

30
29
B

AUTHOR: Zaboyeva, M. I., Spitsyn, P. K.

TITLE: Determination of large quantities of niobium by means of differential spectrophotometry

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 8, no. 2, 1965, 203-207

TOPIC TAGS: ²¹niobium, niobium compound, spectrophotometry, niobium determination, phosphomolybdate complex

ABSTRACT: The determination involved the use of a reaction forming a phosphorus-niobium-molybdenum complex (PNMC). The object of the study was to establish the optimum conditions for the formation of PNMC at high niobium concentrations. The effect of various factors on the formation of PNMC was followed by measuring the optical density of the yellow form of this complex in sulfuric acid solutions containing oxalate and tartrate ions. The optimum temperature was found to be 20C (at higher temperatures, only a phosphorus-molybdenum complex (PMC) is formed). The formation of PNMC was complete in 45 min. The optimum content of phosphate, $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$, and molybdate, $(\text{NH}_4)_2\text{MoO}_4$, was also determined. The following elements were found to interfere with the determination of niobium: zirconium and titanium (above 0.1 mg), vanadium (0.5 mg),

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ACCESSION NR: AP5015568

silicon (0.1 mg), and tungsten (3 mg). Tantalum did not interfere. Procedures for the determination of niobium in technical niobium hydroxide, tantalum hydroxide, and potassium fluoroniobates were developed on the basis of the above optimum conditions and are described. The method of differential spectrophotometry accelerates the analysis considerably without sacrificing accuracy, and reduces the amount of niobium required for the analysis. Orig. art. has: 3 figures and 2 tables.

ASSOCIATION: Kafedra analiticheskoy khimii, Ural'skiy gosudarstvennyy universitet im. A.M. Gor'kogo (Department of Analytical Chemistry, Ural'sk State University)

SUBMITTED: 24Feb64

ENCL: 00

SUB CODE: IC

NO REF SOV: 007

OTHER: 002

llc
2/2

Card

SPITSYN, V.A.

A study of the sodium phosphotungstate transformation under the action of sodium hydroxide. V. A. Spitsyn and E. A. Fabrikova (M. V. Lomonosov State Univ., Moscow). Doklady Akad. Nauk S.S.S.R. 106, 81-7 (1958).—On addition of small amounts of NaOH to Na tungstophosphate, the break-down proceeds according to $\text{Na}_2(\text{PW}_{12}\text{O}_{40}) \cdot 14\text{H}_2\text{O} + 6\text{NaOH} + 4\text{H}_2\text{O} = \text{Na}_2(\text{PW}_{12}\text{O}_{40}) \cdot 3\text{Na}_2\text{WO}_4 \cdot 21\text{H}_2\text{O}$. W. M. Sternberg.

RM

SPITSYN, V.A.

Automatic mill for longitudinal-spiral rolling of twist drills.
Mashinostroitel' no. 12:13 D '61. (MIRA 14:12)
(Rolling mills)

STAYEV, K.P.; SPITSYN, V.A.

Relieving screw-tap profiles in rolling screw threads. Stan.1
instr. 32 no.2:11-14 F '61. (MIRA 14:2)
(Screw cutting)

S/122/61/000/011/002/006
D221/D301

AUTHOR: Spitsyn, V. A., Engineer

TITLE: A new high-production method of manufacturing work-pieces with a helical profile

PERIODICAL: Vestnik mashinostroyeniya, no. 11, 1961, 50 - 54

TEXT: The author developed a new high-production method of helical cross-rolling of components with a profile as used for spiral drills. This can be applied to diameters from 1.5 to 12 mm or more. It consists of a single pass rolling of the entire profile by one or two pairs of opposing rollers, inclined in respect of the blank by an angle corresponding to the helix of the drill. Four rollers in the working position form a closed drawing plate of the profile with insignificant clearances between the adjacent rollers. This ensures an axial drawing of metal by all-round radial compression, and improves the plastic properties of the metal, permitting a single pass rolling of drills from P18 (R18) high-speed steel.

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S/122/61/000/011/002/006
D221/D301

A new high-production method ...

$$L_b = l_t + \frac{l_w}{2.2} \quad (2+4) \text{ mm}$$

where l_t is the length of shank, and l_w is the length of the working part of the drill. At the start of the working part there is a defective portion that must be removed and which amounts to 4-6% of the drill length. The metal has a tendency to width expansion during rolling, and therefore, the diameter of the lands exceeds that of the shank by 0.2 to 0.35 mm which is removed by preliminary centerless grinding. The segments are made in X12 (Kh12M) steel or of other marks. Their hardness is HRC 58-60, and are machined on a relieving lathe. The life of segments is usually 5000-7000 drills, after which they must be reground. The metallographic tests of drills revealed the high quality of rolling without defects and indicated a sorbitic type of pearlite with uniform distribution of carbides. There is no decarburization. The process ensures a 30% saving of high-speed steel, and a 15-fold reduction of labor compared to milling.

Card 3/3

la

2

The development of the conception of the chemical element. V. I. Spitsyn and N. I. Pterov. *Izvestiya Akad. Nauk SSSR Ser. Khim.* 1967, No. 10, 1703-31(1967); *Chem. Zentr.* 1968, II, 645.—A presentation of the idea of the element from antiquity to the present time is given which is suitable for use in instruction in secondary schools. Several definitions of the term by modern authors are given and the valence and behavior of isotopes of elements explained. Three systems of classification of the atoms are differentiated: (1) according to the at. dimensions (system of "moselides" according to Moseley), (2) according to the at. masses (system of "astionides" according to Aston, and (3) according to the chem. and radioactive properties. M. G. Moore

ASH-SLA DETALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS																									
PROCESSING AND PROPERTIES INDEX																									
1ST AND 2ND ORDERS																									
<p>CA</p> <p>Products of decomposition of sodium paratungstate on melting. Vlt. I. Sulzys. <i>J. Gen. Chem. (U. S. S. R.)</i> 8, 803-75 (in English 875) (1958).-- Na paratungstate was prepd. from tungstic acid and NaOH. Analysis of the product showed it to be $\text{Na}_{10}\text{W}_{12}\text{O}_{41}$, which on dehydration and melting decomp. into $\text{Na}_2\text{W}_2\text{O}_7$ and Na_2WO_4. With H_2O, $\text{Na}_2\text{W}_2\text{O}_7$ reacts to give $\text{Na}_{10}\text{W}_{12}\text{O}_{41} \cdot 24\text{H}_2\text{O}$ + $\text{Na}_2\text{WO}_4 \cdot 2\text{H}_2\text{O}$. S. I. Madorsky</p>																									
<p>COMMON ELEMENTS</p> <p>COMMON VARIABLES INDEX</p> <p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>GROUPS</p> <p>1ST AND 2ND ORDERS</p>																									

A study of lithium isopolytungstate. V. I. Spitsyn, I. M. Kuleshov and I. I. Tikhomirov. *J. Gen. Chem.* (U. S. S. R.), 8, 1527-33 (in French, 1933). — A study was made of the system $\text{Li}_2\text{WO}_4\text{--WO}_3$ by hydrolyzing in cold H_2O , followed both by chemical analysis of the products, and by means of powder spectrograms. The results by both methods were in good agreement. In the solid state there exists only one Li-ostungstate, $\text{Li}_2\text{W}_6\text{O}_{26}$. Meta- and para-tungstates, after dehydration and melting undergo the following reactions: $\text{Li}_2\text{W}_6\text{O}_{26} = \text{Li}_2\text{W}_4\text{O}_{20} + 2\text{WO}_3$ and $\text{Li}_2\text{W}_6\text{O}_{26} = 5\text{Li}_2\text{W}_2\text{O}_{14} + 2\text{WO}_3$. On melting, $\text{Li}_2\text{W}_6\text{O}_{26}$ breaks up, but only partially into Li_2WO_4 and WO_3 . On hydration $\text{Li}_2\text{W}_6\text{O}_{26}$ reacts with H_2O as follows: $7\text{Li}_2\text{W}_6\text{O}_{26} + 34\text{H}_2\text{O} = 2\text{Li}_2\text{WO}_4 + \text{Li}_2\text{W}_6\text{O}_{26} \cdot 34\text{H}_2\text{O}$. S. L. Madorsky

S. L. Madorsky

A S = SLA METALLURGICAL LITERATURE CLASSIFICATION

1104-570-8345

54222 • J

2100 434100

ALL INFORMATION CONTAINED HEREIN IS UNCLASSIFIED

Preparation of crystalline lithium metatungstate. Viki
y. Spitsyn, N. I. Sidorenko and I. I. Likhonin. *J. Gen
Chem.* 1958, 28, R 16, 1549. (in English, 1550; 1958).
Crystals of $\text{Li}_2\text{W}_2\text{O}_7 \cdot 10\text{H}_2\text{O}$ or $\text{Li}_2\text{H}_2[\text{W}_2\text{O}_7] \cdot 27\text{H}_2\text{O}$
are easily obtained by allowing a soln. contg. 78.8% of
the anhyd. salt to stand for several weeks over P_2O_5 . Its
solub. in H_2O at 20° is 15.1 parts of the hydrate per 1 part
of H_2O . S. I. Madorsky

428 554 METALLURGICAL LITERATURE CLASSIFICATION

CA

Reduction of lithium tungstates with hydrogen. Vikt. I. Spityagin, A. I. Kachalov and N. I. Sidorov. *J. Gen. Chem.* (U. S. S. R.), 38, 1892-8 (in English, 1968) (1968).
The ease of reduction increases with increase in the W/Li content of the tungstate. The reduction of Li_2WO_4 (I) to metallic W begins at 425° and is quant. at $1000-1200^\circ$. $\text{Li}_2\text{W}_2\text{O}_7$ (II) is changed to a mixt. of I and lower W oxides at $500-700^\circ$ and is completely reduced to W at $1000-1200^\circ$. The reduction of $\text{Li}_2\text{W}_2\text{O}_9$ (both para and meta) proceeds in three stages: at $400-500^\circ$ a mixt. of II and lower W oxides is obtained, which with further elevation of the temp. is reduced first to I and then to W. J. L.

AS-5LA METALLURGICAL LITERATURE CLASSIFICATION

A

φ

ROBERT J. SMITH
The reaction of columbium pentoxide with hydrogen chloride. Viktor L. Spitsyn and N. A. Proobrazhenskii. *J. Gen. Chem.* (U. S. S. R.) 10, 655-66 (1940).—Evapn. of Cb_2O_5 in the HCl stream begins at 400° and proceeds rapidly at about 700° . The reaction is: $\text{Cb}_2\text{O}_5 + 6\text{HCl} \rightleftharpoons 2\text{CbOCl}_2 + 3\text{H}_2\text{O}$. The equil. const. is of the order of 10^{-10} at 600° . The equil. is easily shifted by varying the concn. of vapor. The equil. established at high temp. shifts, during cooling, in the direction of CbOCl_2 hydrolysis and the products of hydrolysis sep. in the following order: at $600-400^\circ$ Cb_2O_5 , at 300° CbO_2Cl and below 300° "white sublimate" (colloidal dispersion) of the av. compn. Cb_2O_5 67, HCl 14, H_2O 14, CbOCl_2 5% and probably some CbO_2Cl . The 1st stage of hydrolysis (above 300°) consists in the formation of CbO_2Cl , and Cb_2O_5 forms as the result of side reaction. Below 300° , the hydrolysis of CbOCl_2 proceeds directly to Cb_2O_5 . The hydrate of Cb_2O_5 absorbs about 20% (by wt. of oxide) HCl at room temp. The absorption decreases with an increase of temp. and above 300° no absorption of HCl was observed. This is explained by absorption of HCl with colloidal dispersed Cb_2O_5 . Cryst. Cb_2O_5 does not absorb HCl. A. A. Podgorny

ASM 12.4 METALLURGICAL LITERATURE CLASSIFICATION

1134. 624.77

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSES AND PROPERTIES INDEX																																																			
<div style="display: flex; justify-content: space-between; align-items: flex-start; padding: 10px;"> <div style="width: 15%; font-size: 2em; font-family: cursive;">Ca</div> <div style="width: 85%;"> <p>The reactions of columbium and its compounds with chlorine and hydrogen chloride. Vikt. I. Spitsyn and N. A. Preobrazhenskii. <i>J. Gen. Chem.</i> (U. S. S. R.) 10, 785-98 (1940); cf. <i>C. A.</i> 34, 7771¹.—Addnl. exptl. data show that Cb oxides begin to react with HCl at 300-400° and with Cl at 350-700°. Metallic Cb powder reacts more energetically with Cl than with HCl at 180° and 300°, resp. The reaction of Cb powder with Cl formed CbCl₃ and that of Cb₂O₅ and CbO₃ gave CbOCl₂. In the presence of 30% charcoal the 2 oxides react with Cl and HCl at 400° to give a mixt. of CbCl₃ and CbOCl₂. NaCbO₃ reacts with Cl and HCl in 2 stages with the decompn. to NaCl and Cb₂O₅ and the formation of CbCl₃ at higher temp. (about 1000°). Cb powder with HCl gives CbCl₃ and CbCl₄ with the liberation of H₂. CbO₃ reacts with HCl similarly to Cb₂O₅ to give CbOCl₂ and its decompn. products.</p> <p style="text-align: right;">Chas. Blanc</p> </div> <div style="width: 10%; font-size: 3em; font-family: cursive;">6</div> </div>																																																			
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SPITSYN, V.I., PREOBRAZHENSKIY, N.A.

"Chlorination of Niobium and Its Compounds" Zhur. Obshch., Khim. 10 No. 9, 1940. Lab. of Inorganic Chemistry, Moscow State Pedagogical Inst. imeni K. Libknekht. rcd. 1 Nov.'39.

Report U-1627, 11 Jan. 52

6

Normal Be tungstate. V. I. Spitsyu and V. I. Shosmak. *J. Gen. Chem.* (U. S. S. R.) 13, 279-85 (1943) (English summary).—Be tungstate was prepd. by mixing equimol. quantities of Be(OH)₂ and H₂WO₄ in the hydrated forms, boiling the suspension for 1 hr., letting stand for 40-50 days at room temp., then boiling for 1 hr. The viscous product on prolonged standing over P₂O₅ analyzed as BeWO₄·3H₂O; the original ppt. before drying approaches the compn. BeWO₄·3H₂O. The substance is not hygroscopic; it is insol. in water and usual org. solvents (EtOH, Et₂O, CCl₄, or benzene). On prolonged boiling with water, the soln. shows WO₄ ions; this hydrolysis is accelerated by heating in an autoclave at 125°. Heating to 250-300° causes complete dehydration and decompn. into BeO and WO₃. Interaction of aq. solns. of BeSO₄ and Na₂WO₄ yields insol., strongly basic Be tungstates. G. M. Kosolapoff

450.314 METALLURGICAL LITERATURE CLASSIFICATION

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990

1900 1910 1920 1930 1940 1950 1960 1970 1980 1990

1ST AND 2ND ORDERS		PROCESSES AND PROPERTIES INDEX		3RD AND 4TH ORDERS	
<p>The normal tungstates of rubidium and of cesium. V. colorless and strongly hygroscopic; soly. of Rb_2WO_4 at 7° and 17°, is 80.7 and 80.0%; Cs_2WO_4 at 17°, 85.6%. On crystn. from soln., Rb_2WO_4 contains water slightly above 0.5 H_2O about 1/4 of which is lost on standing over P_2O_5; more H_2O is lost on heating: the H_2O content of freshly crystd. Cs_2WO_4, corresponding approx. to 211, is gradually lost on standing over P_2O_5 and on heating. After ally lost on standing over P_2O_5, the H_2O contents of both crystn. by evapn. at 100-120°, the H_2O contents of both Rb_2WO_4 and Cs_2WO_4 are less than 0.5%; hence, the tungstates form no stable hydrates. On mixing a suff. concd. aq. soln. (down to 0.74 g./ml. Rb_2WO_4 or 0.46 g./ml. Cs_2WO_4) with EtOH, a sepn. into 2 liquid layers takes place, the concn. of the tungstate rising in the lower aq.-alc. layer and its vol. decreasing; this sepn. effect is also observed with K_2WO_4, but is absent with both Na_2WO_4 and Li_2WO_4. Rb_2WO_4, m. 959° ± 2°; Cs_2WO_4, m. 958° ± 2°; the 1st figure is a lower limit inasmuch as the sample contained about 6.5% K_2WO_4. Temp. arrests on cooling, corresponding to polymorphous transitions, were found for Rb_2WO_4 at 517-515° and 502-500°; for Cs_2WO_4 at 520° and 502-500°. Beginning decompn. is observed for Rb_2WO_4 at about 900°, for Cs_2WO_4 at 950-1000°; at 1200°, decompn. accompanied by volatilization of the alkali metal oxide, is marked.</p> <p>N. Thon</p>					
<p>1. Spitsyn (Moscow State Univ.). J. Gen. Chem. (U.S.S.R.) 17, 11-22 (1947) (in Russian).—Attempts to prep. the simple tungstates by fusion of WO_3 with the alkali metal carbonates failed to give pure products, owing to thermal disson. and volatility. Synthesis by way of a double exchange of the sulfates or carbonates with H_2WO_4 also was unsuccessful, owing to reversibility of the reaction. Most successful was the double exchange of the chlorides with Ag_2WO_4 (prepd. by pptn. of $AgNO_3$ with Na_2WO_4 and drying the washed ppt. at 100-110°), preferably by fusion at 400-500° with a 20-25% excess of Ag_2WO_4. The product is kept in the dark over P_2O_5 and alkali, crushed rapidly and twice leached with water (each time 50 ml. per 5 g. initial chloride) under exclusion of CO_2; the 1st leaching is done in the cold, 10-12 hrs.; the 2nd at boiling for 10-15 min. The yield is 90-92% of the theory, the losses occurring by absorption of part of the soln. by the $AgCl$ ppt. Analysis confirmed the simple formulas Rb_2WO_4 and Cs_2WO_4. Repeated fusion with Ag_2WO_4 did not change the compn. The compds. are</p>					
<p>ASB-5LA METALLURGICAL LITERATURE CLASSIFICATION</p>					
<p>183040 HIF ONY ONE</p>					

2

Thermal stability and volatility of normal alkali metal sulfates. V. I. Ryjarskiy and V. I. Shustak. *Zhur. Obshch. Khim.* (*J. Gen. Chem.*) 18, 1801 (1949). No loss of wt. was found on heating at 1200°. Two hrs. heating at 1200° and 1200° resulted in the following losses (in %): Li_2SO_4 0.12 and 0.81, Na_2SO_4 0 and 0.04, K_2SO_4 0 and 0.12, Rb_2SO_4 0.08 and 0.27, Cs_2SO_4 0.20 and 0.87. In the same order, the corresponding wt. losses (samples 0.25-0.30 g.) on 2 hrs. heating at 1200°, were 1.76, 0.82, 1.82, 3.14, 0.94%/hr.; under the same conditions, in an air stream (0.2 l./min.), 2.50, 0.82, 3.70, . . . 90.20%/hr. Increase of the air stream velocity to 0.4 l./min. reduces the loss, possibly as a result of cooling. Decompos. on (2-12 hrs.) heating at 1200°, detd. by analysis of the residue, amounted to 0.86, 0.21, 0, 0, 0%/hr., resp.; hence losses by simple volatilization, detd. in the same expts., 0.88, 0.77, 1.70, 2.79, 6.94%. At the same temp., in a stream of H_2O vapor, 18 g./hr., in a tube of 20 mm. diam., the loss of wt. was 17.52, 3.89, 11.76, 40.44, 90.85%/hr., the decompos. 4.78, 0.31, 0, 0, 0%/hr., hence the loss due to simple volatilization, 10.84, 3.34, 11.76, 40.44, 90.85%/hr. The 3 sulfates, K_2SO_4 , Rb_2SO_4 , and Cs_2SO_4 , which have the highest melting temps., also have the highest volatilities; the mol. volatilities at 1200° are in the ratio 1:1.4:2.1, i.e. markedly different, despite the great closeness of the melting temps. (1074, 1074, and 1019°). Consequently, volatility is detd. not so much by the ionic bonding in the solid crystal, but by the changes of bonding that take place after fusion; stronger bonding in the solid state seems to give rise to weaker bonding in the liquid state. The increase of volatility from Na to Rb is attributed to polarization of the cation by the O atoms of the SO_4^{--} anion and corresponding shift from ionic to polar bond, which effect increases from Na to Rb, but plays no role in the case of the very small Li. The high volatility, and low melting temp., of Li_2SO_4 is due to the polarizing action of Li on the SO_4^{--} anion, resulting in a decrease of the ionic character of the bond. Of the 5 sulfates, Na_2SO_4 has evidently the strongest ionic-bond character in the fused state. N. Thom

CA

Research into the thermal stability and volatility of the
normal sulfates of the alkali elements. V. I. Spitsyn
and V. I. Shostak (Moscow State Univ.). *J. Gen. Chem.*
U.S.S.R. 19, No. 10, a251-9(1949)(English transla-
tion).—See *C.A.* 44, 417c. E. I. C.

CA

2

Thermal stability and volatility of normal tungstates of alkali metals. Vist. I. Spitsyn (Moscow State Univ.). *Zhur. Obshch. Khim.* (J. Gen. Chem.) 20, 550-4 (1950). — Beginning loss of wt. due to evapn. and partial decompn. is observed at the following temps.: Li_2WO_4 1200°, Na_2WO_4 1200°, K_2WO_4 1000°, Rb_2WO_4 930°, Cs_2WO_4 900°. In the decompn., the alkali metal oxide is split off. In 6 hrs., at 1200°, the degree of decompn. is, in the above order, 1.73, 0.56, 0.86, 2.35, 3.54%. The thermal instability of the tungstates of Li and Na is linked with the effect of counter-polarization. The instability of tungstates of K, Rb, and Cs is detd. by the selective polarizing effect of the O ions in WO_4^{2-} on the alkali metal ions and increases with increasing ionic radius and polarizability of the cations from K to Cs. The rate of evapn. varies in the same order as the degree of decompn. N. Thon

2

CA

Thermal stability and volatility of normal tungstates of
the alkali elements. Viktor I. Solov'ev (M. V. Lomonosov
State Univ., Moscow). *J. Gen. Chem. U.S.S.R.* 20, 579-
83(1950) (Engl. translation).—See *C.A.* 44, 6243d.
R. M. S.

1951

Spitsyn, Vikt. I

Binary system Rb_2WO_6 - WO_3 . VIKT. I. SPITSYN AND I. M. KULESHOV. *Zhur. Fiz. Khim.*, 24, 1197-1200 (1950); *Chem. Abstr.*, 49 [5] 2845f (1955).—The binary system Rb_2WO_6 - WO_3 was investigated by the visual-polythermal method in 5 mol. % steps up to 20 mol. % WO_3 and in 1% steps from 20 to 85%; above this concentration, as the temperature approached the melting point of WO_3 , the WO_3 volatility introduced an appreciable error. Rb_2WO_6 was prepared by a method previously described, but its melting point was 952°C. instead of 959°. The liquidus beyond the eutectic at 563° with 39 mol. % WO_3 rose continuously with 3 slight inflections at 680°, 882°, and 1053°, corresponding to 51, 68, and 84 mol. % WO_3 . Beyond each inflection a different crystalline form appeared in the melt; this

suggests the compounds $\text{Rb}_2\text{W}_2\text{O}_7$, $\text{Rb}_2\text{W}_3\text{O}_{10}$, and $\text{Rb}_2\text{W}_4\text{O}_{13}$ with approximate incongruent melting points of 681°, 858°, and 1045°. It is noted that the tendency to form higher-acidity compounds increases from Li to Rb and that the stability of the ditungstates decreases; this is ascribed to the decreasing polarizing effects of ions with increasing radii.

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SPITSYN, V. I.

IR 175T68

USSR/Nuclear Physics - Isotopes
Periodic Table

21 Apr 50

"Periodicity of Types of Predominant Isotopes of Elements," V. I. Spitsyn, Corr Mem, Acad Sci USSR, Inst Phys Chem, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXI, No 6, pp 1053-1056

Distribution of predominant isotopes of elements according to types of atoms, e.g., even atoms ($4n$, $4n+2$) and odd atoms ($4n+1$, $4n+3$). Graphs show atomic type according to mass as function of atomic number, for main and secondary groups. Notes definite regularities. Submitted 15 Feb 50.

 175T68

SPITSYN, V. I.

PA 165T48

USSR/Nuclear Physics - Nucleus
Neutrons

1 May 50

"Problem of the Ratio of the Number of Neutrons
and Protons in Atomic Nuclei," V. I. Spitsyn,
Corr Mem, Acad Sci USSR, Inst of Phys Chem,
Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXII, No 1, pp 41-44

Considers ratio N_n/N_p as function of atomic num-
ber Z for odd and even elements and predominant
isotopes. Gives graph, table, and formulas of
 N_n/N_p vs Z . Submitted 15 Feb 50.

165T48

SPITSYN, I.

Spitsyn, I. and Kyleshov, I. M. Investigation of the binary system $\text{Rb}_2\text{WO}_4 - \text{WO}_3$.
Vict. Page 1197.

The M. V. Lomonosov
Moscow State University
February 14, 1950.

SO: Journal of Physical Chemistry, Vol. 74, No. 10. October 1950.

SPITSYN, Vikt. I.

USSR/Chemistry - Titanium Compounds Jan/Feb 51

"Investigation of Phosphates of Titanium," Vikt. I. Spitsyn, Ye. A. Ippolitova, Lab Inorg Chem, Moscow Order of Lenin State U imeni M. V. Lomonosov

"Zhur Analit Khim" Vol VI, No 1, pp 5-14

Studied interaction of titanyl salt soln with phosphates under various conditions. "Titanium phosphate" ppt, dried at room temp, is $2TiO_2 \cdot P_2O_5 \cdot H_2O$ or $(TiO)(HPO_4) \cdot 2.5H_2O$ in compn. Compn when hydrolyzed: in water approx $3TiO_2 \cdot P_2O_5 \cdot 6H_2O$; in alk

17717

USSR/Chemistry - Titanium Compounds Jan/Feb 51
(Contd)

soln a sharply reduced P_2O_5 content. Detd optimum conditions for sepn of titanyl phosphate. Coagulation of titanic acid by phosphate ions and their chemosorption by titanic acid gel occurs.

17717

176T21

SPITSYN, Vikt. I.

USSR/Chemistry - Molybdenum and Wolfram Compounds Feb 51

"Investigation of Thermal Instability and Volatility of Normal Molybdates of Alkali Elements," Vikt. I. Spitsyn, I. M. Kuleshov, Lab Inorg Chem, Moscow State U

"Zhur Obshch Khim" Vol XXI, No 2, pp 401-406

Normal molybdates and wolframates of alkali metals evaporate considerably and decompose with separation of alkali oxides when heated at 1,200°. Rate of decomposition of all compounds and rate of evaporation of wolframates increased for metals in order Na, Li, K, Rb, Cs; rate of evaporation of molybdates in

176T21

USSR/Chemistry - Molybdenum and Wolfram Compounds (Contd) Feb 51

order Li to Cs. Thermal instability of Li and Na molybdates attributed to growth of contrapolarization processes in compounds; instability and evaporation of K, Rb, Cs molybdates explained by polarizing action of O²⁻ ions from not fully integrated anions.

176T21

CA

Normal molybdates of rubidium and of cesium. Vikt. I. Spitsyn and I. M. Kuleshov (Moscow State Univ.). *Zhur. Obshchei Khim.* (J. Gen. Chem.) 21, 408-12 (1951).—
Anhyd. Rb_2MoO_4 was prepd. by fusion of MoO_3 (purified as in the preceding abstr.) and Rb_2CO_3 . Anhyd. Cs_2MoO_4 was prepd. (on account of the volatility of Cs_2CO_3) by fusion of Ag_2MoO_4 (see preceding abstr.) with CsCl . The Ag_2MoO_4 was first fused, then 2 CsCl added slowly over 20-30 min., and the cooled melt was leached with H_2O in the dark for 2-4 hrs. and after complete sedimentation the soln. was decanted and evapd. on a water bath. The products, Rb_2MoO_4 and Cs_2MoO_4 , are white, and strongly hygroscopic. The solubilities at 18° are, resp., 67.88 and 67.07 g./100 g. soln. (0.4 and 4.8 moles/l.), the m.ps. 920 and 925° , resp. Interplanar distances of K_2MoO_4 , Rb_2MoO_4 , and Cs_2MoO_4 are very close. Thermograms show endothermal polymorphic transitions, in Rb_2MoO_4 , at 270 , 287 , and 435° , and in Cs_2MoO_4 , at 409 , 470 , and 540° . N. Thon

18875

USSR/Chemistry - Rb and Cs Molybdates

Aug 51

"Thermal Analysis of the System $K_2MoO_4-MoO_3$, $Rb_2MoO_4-MoO_3$, and $Cs_2MoO_4-MoO_3$," Vikt I. Spitsyn, I. M. Tulaev, Lab of Inorg Chem, Moscow Order of Lenin State U Invent M. V. Lomonosov

"Zhur Obshch Khim" Vol XXI, No 8, pp 1365-1374

Contrary to latest literature data, di-, tri-, tetra- and unstable hexa- and octo-molybdates of K and Rb exist in these systems. Liquidus curves of Rb and K systems are similar. There is no dimolybdate in Cs system, but same other compounds in Rb system. Describes cryst form and notes some regularities in mp of acid molybdates.

18875

USSR/Chemistry - Rb and Cs Molybdates Aug 51
(Contd)

Found exothermic effect at 370° for Cs molybdates. Assumes existence of reversible conversion in solid phases in acid molybdate systems.

Chemical

SPITSYN, Vikt I.

18875

191T33

SPITSYN, Vikt. I.

USSR/Chemistry - Molybdenum

89p 51

"Investigation of Isopolymolybdates of Alkali Elements by the Hydration Method," Vikt. I. Spitsyn, I. M. Kuleshov, Lab Inorg Chem, Moscow State U imeni M. V. Lomonosov

"Zhur Obshch Khim" Vol XXI, No 9, pp 1549-1563

Investigated melts of acid molybdates of Na, Li, K, Rb, Cs of compns from $Me_2O \cdot 2MoO_3$ to $Me_2O \cdot 5MoO_3$, found that each metal forms only 1 stable isopolymolybdate. Li, Na form dimolybdates; K, Rb, Cs - tetramolybdates. Even stable compds decamp slightly into normal molybdate and MoO_3 .

191T33

USSR/Chemistry - Molybdenum
(Contd)

89p 51

Hydration of isopolymolybdates with H_2O (cold for Li, Na, boiling for K, Rb, Cs compds) converts them to sol molybdates. Indicates most expedient method for prepn of stable isopolymolybdates by hydration method.

191T33

SPITSYN, Viki I.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Inorganic Chemistry

Chem 3

Investigation of isopolymolybdates of the alkali elements by the method of hydration. S. T. Seltman and I. M. Kuleshov (M. V. Lomonosov State Univ., Moscow). *J. Gen. Chem. U.S.S.R.* 21, 1701-18 (1951) (Engl. translation); *Zhur. Obshchei Khim.* 21, 1849-63 (1951); cf. C.A. 46, 9006k. — The compds. occurring at room temp. in melts of acid molybdates of the alkali metals were detd. by analysis of successive water washes; the method depends on differences in rates of hydration of the components of the melts. The melts were prepd. by fusing a calcd. amt. of MoO_3 with the resp. carbonates (or with the normal molybdate in the case of Cs). In Li and Na molybdates there were found for $\text{M}_2\text{O}:\text{MoO}_3 = 1:2$ $\text{M}_2\text{Mo}_2\text{O}_7$ and traces of M_2MoO_4 and MoO_3 ; for $\text{M}_2\text{O}:\text{MoO}_3 = 1:3$, 1:4, and 1:5 there were found $\text{M}_2\text{Mo}_2\text{O}_7$ and MoO_3 . In K, Rb, and Cs there were found $\text{M}_2\text{O}:\text{MoO}_3 = 1:2$ and 1:3 there were found molybdates for $\text{M}_2\text{O}:\text{MoO}_3 = 1:4$ and 1:5, M_2MoO_4 and $\text{M}_2\text{Mo}_2\text{O}_7$; for $\text{M}_2\text{O}:\text{MoO}_3 = 1:4$ and 1:5, $\text{M}_2\text{Mo}_2\text{O}_7$, M_2MoO_4 , and MoO_3 . The isopolymolybdates of different compn. that are detected by thermal analysis during the solidification of molten mixts. do not exist at ordinary temps. The most convenient procedure for prepg. the dimolybdates of Li and Na and the tetramolybdates of K, Rb, and Cs by the hydration method is outlined.
Bernard M. Zeffert

54

SPITSYN, Vikt. I.

Chemical Abst.
Vol. 48 No. 4
Feb. 25, 1954
Inorganic Chemistry

The thermal stability and volatility of the isopolymolybdates of the alkali elements. Vikt. I. Spitsyn and I. M. Kimeshov (M. V. Lomonosov State Univ., Moscow). *J. Gen. Chem. U.S.S.R.* 21, 1717-22 (1951) (Engl. translation); *Zhur. Obshchei Khim.* 21, 1564-70 (1951); cf. *C.A.* 45, 5553i, 5554f. —Calcining melts of the acid molybdates at 1000 and 1200° results in an appreciable loss of MoO_3 and in the evapn. of certain molybdates. At ratios of MoO_3 : M_2O in the melt greater than 3:1 practically nothing but MoO_3 is evapd. When $\text{M}_2\text{O} \cdot 5\text{MoO}_3$ melts are heated to const. wt. at 1000°, they yield the following residues: $\text{Li}_2\text{O} \cdot 1.5\text{MoO}_3$, $\text{Na}_2\text{Mo}_2\text{O}_7$, $\text{K}_2\text{Mo}_2\text{O}_7$, $\text{Rb}_2\text{Mo}_2\text{O}_7$, and $\text{Cs}_2\text{Mo}_2\text{O}_7$. The dimolybdates of Li and Na, and the trimolybdates of K, Rb, and Cs are the most stable at 1000-1200°. Stability relationships are related to the polarizing effects of the metal ions; the lower the polarizing effect the more complex the anion of the polymolybdate that can be stably assocd. with it. Bernard M. Zeffert

MF
7-27-54

SPITSYN, V.I., prof., red.; LAPITSKIY, A.V., red.; ORLOVA, N.S., tekhn.red.

[Radiochemistry; collected works] Radiokhimiia; sbornik rabot.
Pod red. V.I.Spitsyna. Moskva, 1952. 358 p. (MIRA 19:6)

1. Moscow. Universitet. 2. Chlen-korrespondent AN SSSR (for
Spitsyn).

(Radiochemistry)

SPITSYN, V. I., SHOSTAK, V. I., and MEYEROV, M. A.

"Investigation of the Volatility of Chlorides of Alkali Metals at High Temperature," Lab. of Inorg. Chem., Moscow State U., Zhur. Obshch. Khim., 22, No.5, pp 758-765, 1952

The temp condtns of the beginning of visible evaporation of chlorides of alkaline elements in gaseous media (air, hydrogen chloride, water vapor) were studied. In air, volatilization starts at the following temp: LiCl 550°, NaCl 750°, KCl 650°, RbCl 650°, CsCl 550°. The volatilization temps in a flow of hydrogen chloride or water vapor were the same within a range of $\pm 50^\circ$. The above compds become visibly volatile at temps 50 to 120° lower than their melting points. Vaporization proceeds considerably faster in a stream of water vapor than under heating in air or in hydrogen chloride. At the temps of the expt (550-800°) this process is not accompanied by hydrolysis.

258T15

SPITSYN, Vikt. I.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

④ 7
Volatility of alkali metal chlorides at high temperatures.
Vikt. I. Spitsyn, V. I. Shostak, and M. A. Meerov/Moscow
State Univ. J. Gen. Chem. U.S.S.R. 22, 821 (1953).
(Engl. translation).—See C.A. 47, 3067h. H. L. H.

11-5-54

SPITSYN, V. I.

USSR/Chemistry - Alkali Metals

Jun 52

"Investigation of the Pyrosulfates of Alkali Metals,"
V. I. Spitsyn, M. A. Meyerov, Lab of Inorg Chem,
Moscow State U imeni M. V. Lomonosov

"Zhur Obshch Khim" Vol XXII, No 6, pp 905-912

The pyrosulfates of all alkali metals were prepd and
characterized.

218T12

SPITSYN, VIKT. I.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Inorganic Chemistry

(2)
/ Acid sulfates of the alkali elements. Wikt. I. Spitsyn
and A. A. Mironov (M. V. Lomonosov State Univ., Moscow).
J. Gen. Chem. U.S.S.R. 22, 959-62 (1952) (Engl.
translation); Zhur. Obshchei Khim. 22, 901-5 (1952).
The alkali metal acid sulfates were prepd. by evap. solns.
of the pyrosulfates (cf. following abstr.) over P_2O_5 . The
crystals obtained were anhyd. The m.ps. were: 104 ± 0.5 ,
186, 216, 285, and 110° for the salts of Li to Cs, resp. Slow
decompn. began at 90-100, 140-160, 160-170, 170-200
and $150-160^\circ$ for the salts of Li to Cs, resp. In all cases the
decompn. products were the corresponding pyrosulfates in
yields of 98.2-100%. The salts could be melted rapidly
with no perceptible decompn. The results are discussed
from the standpoint of the polarizing action, and polariz-
ability of the ions. R. F. Trimble, Jr.

9-2-54
JRP

SPITSYN, I. VIKT.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

(3)
Effect of gaseous media on the evaporation rate of alkali chlorides. Vikt. I. Spitsyn and V. I. Shustak. *Zhur. Obshchei Khim. Lomonosov State Univ., Moscow*. 22, 1109-15 (1952). — 22, 1043-71; *J. Gen. Chem. U.S.S.R.* 22, 1109-15 (1952). — Expts. were made in an elec. furnace at const. temp. of 800°. Controlled vols. of air, water vapor, and gaseous NH₃ were passed over Pt boats filled with alkali chlorides. Gaseous CO₂ and HCl were used on CsCl only. The rate of evapn. was detd. by difference in wts. at standard time intervals. The results show: (1) At const. temp. of 800 and gas flow (0.4 l. per min. N.T.P.) the rate of evapn. increases in the order Li, K, Rb, Cs, and Na. (2) At const. flow rate of the gases the rate of evapn. increases in proportion to the polarity of the gas used. (3) The effect of the gas polarity is greatest on LiCl and Cs, the smallest on NaCl. Evapn. of LiCl in water vapor is twice that in the air. (4) At low gas flow rates (0.2 l. per min. and less) the rates of evapn. remain identical for all gases. M. O. Holowaty

MF
11-5-54

SPITSYN, Vikt I.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
General and Physical Chemistry

6
(3)
Volatility of alkali chlorides from their aqueous solutions.
Vikt. I. Spitsyn and M. A. Meev (M. V. Lomonosov State
Univ., Moscow). Zhur. Obshch. Khim. 22, 1071-3; J.
Gen. Chem. U.S.S.R. 22, 1117-18(1952).—Detns. made on
0.1N solns. of LiCl, KCl, RbCl, and CsCl showed no vola-
tility of chlorides from the aq. solns. M. O. Holowaty

11-67-54

SPITSYN, Vikt I.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

✓
③
Chem
The solubility of calcium molybdate. Vikt. I. Spitsyn and I. A. Savich (M. V. Lomonosov State Univ., Moscow). *J. Gen. Chem. U.S.S.R.* 22, 1423-4 (1952) (Engl. translation); *Zhur. Obshchei Khim.* 22, 1278-81 (1952).—The soly. in water of normal Ca molybdate was studied over the temp. range of 0°-100°. Colorimetric detn. of the Mo content and detn. by the method of evapn. of satd. solns. of Ca molybdate gave results in close agreement. The soly. curve

of Ca molybdate is characterized by an inflection point (max.) at a temp. of 80°.
Bernard Rubin

1-9-54
JPL

SPITSM, V.I.
Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Inorganic Chemistry

(2) Chem
Mixed sulfates of the alkali elements and ammonium.
✓ Vkt. I. Spitsyn and M. A. Meerov (M. V. Lomonosov
State Univ., Moscow). *J. Gen. Chem. U.S.S.R.*, 22, 1321-
4 (1952) (Engl. translation); *Zhur. Obshchei Khim.*, 22, 1282-4
(1952).— MNH_4SO_4 prepd. by crystn. of ammoniacal
solns. of pyrosulfates, decomp. on heating and are trans-
formed into the pyrosulfates. The temps. of this trans-
formation to pyrosulfates increases with increasing ionic
radius of the alkali elements and are close to the temps. of
conversion of the corresponding metal hydrogen sulfates to
pyrosulfates. —Bernard Rubin

9-2-54
JHR

SPITSYN, Vikt. I.; MEEROV, M.A.
MEYEROV, M.A.

Reduction of the normal sulfates of alkali metals by hydrogen and
ammonia. Zhur. Obshchey Khim. 22, 2079-83 '52. (MLRA 6:2)
(CA 47 no.13:6616 '53)

1. M.V. Lomonosov State Univ., Moscow.

SPITSYN, V. I.

VIKTOR, I. SPITSYN

Chemical Abst.

Vol. 48 No. 9

May 10, 1954

Acids, Alkalies, Salts, and
Other Heavy Chemicals

②chem
Reduction of the normal sulfates of alkali metals by
hydrogen and ammonia. V. I. Spitsyn and V. A.
Meerov. J. Gen. Chem. U.S.S.R. 22, 2138-8 (1952) (Engl.
translation).—See C.A. 47, 6616h. H. L. H.

9-2-54
JHP

SACHS, J. I., SMITH, J. A.

Calcium Polyphosphate

Investigation of the solubility of calcium polyphosphate. *Zinn. ab. Klin.* 22, no. 3, 1932.

AMERICAN BOARD OF MEDICAL ADOPTIONS, BUREAU OF MEDICALS, NOVEMBER 1952. UNCLASSIFIED.

CA
Dehydration and thermal decomposition of some heteropoly compounds. V. I. Seitayn and I. D. Kolli (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 83, 239-42(1952).—Changes of wt. on heating were studied with 0.1-g. samples of the following compds. (compos. in oxides = nearest coordination formula): (I) $2.54 \text{ Li}_2\text{O} \cdot 8\text{SiO}_2 \cdot 11.70 \text{ WO}_3 \cdot 16.24 \text{ H}_2\text{O} = \text{Li}_2\text{H}_2[\text{Si}(\text{W}_2\text{O}_7)_2] \cdot 14.5 \text{ H}_2\text{O}$; (II) $2.09 \text{ K}_2\text{O} \cdot 8\text{SiO}_2 \cdot 12.15 \text{ WO}_3 \cdot 10.03 \text{ H}_2\text{O} = \text{K}_2\text{H}_2[\text{Si}(\text{W}_2\text{O}_7)_2] \cdot 8 \text{ H}_2\text{O}$; (III) $2.18 \text{ CaO} \cdot 8\text{SiO}_2 \cdot 12.27 \text{ WO}_3 \cdot 24.66 \text{ H}_2\text{O} = \text{Ca}_2\text{H}_2[\text{Si}(\text{W}_2\text{O}_7)_2] \cdot 22.5 \text{ H}_2\text{O}$; (IV) $2.78 \text{ K}_2\text{O} \cdot 23.78 \text{ WO}_3 \cdot 17.78 \text{ H}_2\text{O} = \text{K}_2\text{H}_2[\text{P}(\text{W}_2\text{O}_7)_2] \cdot 7 \text{ H}_2\text{O}$; (V) $3.28 \text{ K}_2\text{O} \cdot \text{P}_2\text{O}_5 \cdot 24.17 \text{ MoO}_3 \cdot 13.06 \text{ H}_2\text{O} = \text{K}_2\text{H}_2[\text{P}(\text{MoO}_4)_2] \cdot 4.5 \text{ H}_2\text{O}$. In an air stream flowing at 4 l./hr., and with H_2O vapor at 20° (17.5 mm.), at 25° , I absorbed moisture and the H_2O content rose to 28 mols. Decomposition began at 35° , and at 50° the H_2O content was 16 mols. The H_2O content continued to fall with rising temp. up to 100° . On further heating, the H_2O content falls stepwise, and at least 3 hydrates appear to exist, with 4, 1.5, and 0.5 H_2O mols. The last 0.5 mols. are kept tenaciously on heating from 360 to 440° . The dehydration curves of II, IV, and V are similar to one another: very little H_2O is lost up to 100° ; there appear to exist a decahydrate and a pentahydrate of II, and a dodecahydrate and a hydrate containing 8.5 H_2O of IV. Above 100° , dehydration is markedly

slower. Further dehydration of II proceeds in 3 stages, and of IV and V in 2 stages. II keeps 0.5 H_2O on heating at 350 – 480° ; IV and V keep 1 H_2O at 240 – 480° and 180 – 400° , resp. III gives up H_2O up to 280° , when the amt. of H_2O left goes down to 3 mols.; there is no further dehydration up to 300° . Above 300° , more H_2O is lost in a continuous way; the monohydrate is stable in the temp. range 440 – 60° , and the hemihydrate at 480 – 500° . In IV and V, H_2O is bound more strongly than in I, II, and III. The binding of H_2O is weakened by replacement of K by Li, or of K by Ca. V is dehydrated more easily than IV. In 12 hrs. treatment with H_2O (at room temp.) of the salts dehydrated at 200° , I was found to give a small amt. of insol. residue; with II and III this occurred only on heating at 200° , and with (VI) $2.18 \text{ Na}_2\text{O} \cdot \text{P}_2\text{O}_5 \cdot 23.94 \text{ WO}_3 \cdot 34.63 \text{ H}_2\text{O} = \text{Na}_2\text{H}_2[\text{P}(\text{W}_2\text{O}_7)_2] \cdot 15 \text{ H}_2\text{O}$, only above 300° . Phosphotungstates are more heat-resistant than silicotungstates. After heating to 500° , the aq. ext. of the dehydrated tungstate shows a marked deficit of WO_3 relative to the amt. of alkali. With silicotungstates, sol. alkali silicate is found in the ext., and with VI, sol. phosphate. These findings compel a critical attitude towards existing views on the constitution of heteropoly compds. It is probable that, partly at least, H_2O is bound within the coordination core. N. Thon

SPITSYN, Vkt. I.

Reactions of sodium carbonate with niobium pentoxide.
 Vkt. I. Spitsyn and A. V. Lavitskii (M. V. Lomonosov
 State Univ., Moscow). *Sbornik Statei Obshchei Khim.*,
Akad. Nauk S.S.S.R. 1, 37-43 (1953); cf. C.A. 48, 3180s.
 Mixts. of Na_2CO_3 and Nb_2O_5 do not react below the m.p. of
 Na_2CO_3 at atm. pressure or *in vacuo*. Mixts. contg. Na:Nb
 3:1 and 5:1 kept for 2 hrs. at 885° (atm. pressure) gave
 white melts which on analysis led to the following conclu-
 sions: the 3:1 mixt. had a little Na_2CO_3 left, the 5:1 mixt.
 more than 30%; in the former the loss of CO_2 was a little
 less than required for the formation of orthoniobate, in the
 latter a little more. It is postulated that in the 3:1 mixt.
 with the orthoniobate a little pyroniobate, $\text{Na}_4\text{Nb}_2\text{O}_7$, was
 present and in the 5:1 mixt. a little Na_4NbO_4 . Similar
 expts. were carried out *in vacuo*. No reaction took place
 below 700° ; at 800° the product of a 1:1 mixt. was a 7:6
 salt and that of the 4:1 mixt. heated at 800, 900, 1000, 1100,
 and 1200° was the 7:6 orthoniobate. The former was con-
 firmed under 700 magnification, the latter by chem. analy-
 sis; x-ray analysis ruled out the possibility of the formation
 of anhyd. metaniobate. That metaniobate was not an in-
 termediate product was shown by heating NaNbO_3 with
 Na_2CO_3 at 875° for 1 hr. at atm. pressure *in vacuo*; no reac-
 tion took place. I. Bencowitz

SPIS VII
CZECH

✓ The structure of some isopoly compounds and heteropoly compounds by the method of tagged atoms. V. I. Spicyn. Chem. Zvesti 8, 654-62 (1953).—Study of the structure of alkali pyrosulfates (I) by isotope S^{32} , as radioactive indicator, shows that the behavior of S atoms in I is very much dependent on the character of cation in the outside sphere, especially on its polarization effect. In the case of Cs pyrosulfate there is a mol. compd. conventionally designated $M_2[SO_4]SO_4$ and in the case of Li, $M_2[S_2O_7]$ with equivalent S atoms. In $Na_2W_2O_7$ and $Na_2W_2O_8$ it was found by radioactive isotope W^{182} that all W atoms are equiv. In heteropoly compds., $H_4[Si(W_2O_7)_6] \cdot 10.5H_2O$ and $H_4[P(W_2O_7)_6] \cdot 10.5H_2O$ (II), at pH 1.8, only $1/6$ of the W atoms are capable of isotopic exchange. However after a partial decompn. of II, at pH 4.4, the isotopic exchange is finished in one hr. The isotopic exchange of W between $Na_2H_2P_2O_7$ and $H_4[P(W_2O_7)_6] \cdot 10.5H_2O$ is practically zero. Jan Micka

only 1/6

V. I.
SPITSYN, ~~V. I.~~

U S S R .

Reaction of niobium pentoxide with sodium hydroxide.
Vikt. I. Spitsyn and A. V. Lapitskii. *J. Appl. Chem.*
U.S.S.R. 26, 101-8 (1953) (Engl. translation). See C.A.
48, 3180d. H. L. H.

SPITSYN, VIKT. I.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
Inorganic Chemistry

Reaction of niobium pentoxide with sodium hydroxide. Vikt. I. Spitsyn and A. V. Lapitskii. *Zhur. Priklad. Khim.* 26:117-23 (1958). — Nb_2O_5 , $\text{NaNbO}_4 \cdot 3.5\text{H}_2\text{O}$, and $\text{Na}_4\text{Nb}_2\text{O}_{10} \cdot 32\text{H}_2\text{O}$ were fused with NaOH to prove an earlier postulate (C.A. 37, 2287) that salts will result which upon treatment with water will have a Na:Nb ratio of 7:6. As expected, fusions of 1:1 and 7:6 salts with NaOH at 350, 450, and 650°, lasting 11 hrs., resulted in a 7:6 salt (Nb_2O_5 61.21%, H_2O 23.12%, and Na_2O , by difference, 16.67%). Excess of NaOH from fusion of Nb_2O_5 -NaOH could be removed only by digestion with abs. EtOH. The grayish powder formed showed no cryst. structure under a 375 magnification. The analysis of the powder after drying to const. wt. at 120° corresponded to the salt $\text{Na}_7\text{Nb}_6\text{O}_{42}$. That 6:1 salts are possible was shown previously (C.A. 25, 2381; 34, 407). Crystallographic as well as thermal analyses prove it. It m. 910°, d_4 4.405. Hydrolysis gives $\text{Na}_4\text{Nb}_2\text{O}_{10} \cdot 32\text{H}_2\text{O}$ and NaOH.

I. Bencowitz

✓ An application of the isotope exchange method to the structure study of aquapoly and heteropoly compounds. Vikt. I. Spitsyn and E. A. Torchenkova (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 95, 289-92(1954).—The W^{18} isotope (designated W^*) was used in the study of the relative stability of tungstate anions in soln. The purity of the isotope compds. was tested by the half-life detn. and the measurement of the max. energy of the β -radiation. Silico- and phosphotungstic acids were prepd. from the ordinary and W^* para- and metatungstates. The double-exchange reaction between the para- and metatungstates did not proceed instantaneously (contrary to Souchay, *C.A.* 38, 6224¹; 40, 4310²). The ordinary tungstate anion did not enter into double-exchange reactions with the heteropoly anions, while the hexatungstate anion of the paratungstate did, which might indicate it to be the structural unit of heteropoly anions. Na phosphotungstate and the acidified $Na_2W^{18}O_6$ soln. interact very rapidly while the crystals of $Na_2W^{18}O_6$ react much more slowly than does the freshly formed paratungstate. Two heteropoly compds., the radioactive silicophosphotungstic acid and the phosphotungstic acid, interact to an extent of only 20% at pH 1.8 in any length of time between 5 min. and 240 hrs. At higher pH, the reaction is more rapid. The bondings of the added ions in the inner spheres in metatungstate anions and the phosphotungstate anions appear to be quite different.

W. M. Sternberg

①

Spitsyn, V. I.

✓ Analiz vody (Water Analysis). Edited by V. I. Spitsyn.
Moscow: Gosudarst. Nauch.-Tekh. Izdatel. Int. Otdel.
Okhrame Nedr. 1955. 143 pp.

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SPITSIN, V. I.

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METHODS OF WORK IN APPLYING RADIOACTIVE
ISOTOPES. V. I. Spitsin, P. N. Kodozhigov, M. M.
Goluvina, A. P. Kozlov and Z. A. Sokolova, Moscow,
Akademiya Nauk S. S. R., 1955. 287p. (In Russian)
(Book on display at Geneva Conference)

A manual for workers in research institutions and in
industry having to deal with radioactive isotopes. A de-
scription of the properties of radioactive isotopes, methods
of measuring α , β , γ radiations and rules for work with
radioactive isotopes. Practical tasks in the application of
radioactive isotopes in chemistry. A brief theoretical
summary precedes each task. (publisher's note)

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SPITSYN, V. I. and SHOSTAK, N. Z.

"Preparation of anhydrous beryllium chloride on a larger scale laboratory installation by chlorination of a mixture of beryllium oxide with carbon", Khimiya Redkikh Elementov, No. 2, p 85, 1955.

A description of the laboratory installation in which a high purity beryllium chloride with a 90% utilisation of chlorine can be obtained, as well as rawmaterials used and the method of operation.

SO: D--413171

"A study of the process of chlorination of a mixture of beryllium oxide with carbon," Khimiya Redkikh Elementov, No. 2, p 93, 1955.

The optimum condition for the chlorination reaction were: established temp. 900-950°C, BeO to carbon ratio 2 : 1; briquetting of the mixtrue with subsequent ignition to 850°C increases the reaction velocity. the Maximum utilisation of beryllium oxide 89-92% and that of chlorine 84-89%. The linear velocity of chlorine has a strong influence on the crystal size of beryllium chloride produced.

SO: D--413171

SPIRYN, A.

Testing the structure of some complex compounds by the method of marked atoms.

p. 209.

ROCNINI CHEM, Warszawa, Vol. 29, no. 2/3, 1955.

SO: Monthly List of East European Accessions, (EAL), LC, Vol. 4, no. 10, Oct. 1955,
Uncl.

USSR/ Chemistry - Mendeleev's law

Card 1/1 Pub. 86 - 1/35

Authors : Spitsyn, V. I., Mem. Corresp. Acad. Sc. USSR

Title : D. I. Mendeleev's periodic law

Periodical : Priroda 44/2, 3 - 14 Feb 1955

Abstract : An account is given of Mendeleev's discovery of the periodic law and his other activities such as the study of the periodicity of the spectra of elements. The working of the periodic table is explained with examples, its usefulness in discovering previously unknown elements is pointed out, and the way in which the existence of isotopes was harmonized with the law is recounted. The structure of the atom is also dealt with. Graphs; table; illustration.

Institution :

Submitted :

Spitsyn, V.I.

Investigation of the structure and properties of some heteropoly molybdenum and tungsten compounds with radioactive indicators. V. I. Spitsyn and Yu. I. Bykovskaya (M. V. Lomonosov State Univ., Moscow). Doklady Akad. Nauk S.S.S.R. 104, 250-8 (1955); C.A. 49, 15591i. Mo^{6+} , W^{6+} , and P^{5+} were used in the study of the W and Mo compds., $\text{Na}_2\text{H}_2[\text{P}(\text{Mo}_2\text{O}_7)_2] \cdot 18\text{H}_2\text{O}$, $\text{Na}_2\text{H}_2[\text{P}(\text{W}_2\text{O}_7)_2] \cdot 18\text{H}_2\text{O}$, $\text{H}_4[\text{Si}(\text{Mo}_2\text{O}_7)_2] \cdot 7\text{H}_2\text{O}$, and $\text{Na}_2(\text{PW}_2\text{O}_7)_2 \cdot 20\text{H}_2\text{O}$. The rate of exchange of MoO_4 between the active $\text{Na}_2\text{Mo}^{6+}\text{O}_4$ and the inactive $\text{Na}_2\text{H}_2[\text{P}(\text{Mo}_2\text{O}_7)_2] \cdot 18\text{H}_2\text{O}$ at a pH 1.2-11.0 (obtained by acidifying with HNO_3) was measured in time intervals of 15 min. to 24 hrs. It is almost instantaneous at low pH values, and slower at lower acidity. The rate of exchange of inner-sphere constituents was studied with the luteo $\text{Na}_2(\text{PW}_2\text{O}_7)_2 \cdot 20\text{H}_2\text{O}$ and the inactive silicomolybdic acid in an acid soln., and of the active luteo phosphotungstic acid with inactive Na_2WO_4 . W. M. S.

Spitsyn, V. I.

✓1225

STUDY OF ISOTOPIC EXCHANGE OF OXYGEN BETWEEN
HEAVY OXYGEN WATER AND CERTAIN TUNGSTATES. 62

V. I. Spitsyn, R. I. Aistova, and V. N. Vasil'ev. (Inst. of
Physical Chemistry). Doklady Akad. Nauk S.S.S.R. 104,
741-3(1955) Oct. 11. (In Russian)

Water- O^{18} was used in the investigation of the sodium
paratungstate $Na_4W_{12}O_{41} \cdot 28H_2O$ structure. The results
proved that in normal tungstate and in sodium paratungstate
all the oxygen atoms are accessible for isotopic exchange of
oxygen with water as solvent. During the exchange, the
enrichment of paratungstate anion by heavy oxygen isotopes
was observed, while in the normal tungstate ion no such
phenomenon occurred. This indicates that the fractionation
of oxygen isotopes depends not only on the mass of the
hydrated elementary ions, but also, on the complex ion mass
present in the solvent. (R.V.J.)

SPITSYN, VIKT. I.

The investigation of dehydration processes of some
niobates. A. V. Lapitskii, V. A. Pchelkin, and Vikt. I.
Spitsyn (M. V. Lomonosov Moscow State Univ.). *Doklady
Akad. Nauk S.S.S.R.* 185, 1202-4 (1968). - The dehydration
of Na and K hexaniobates, hydrated KNbO_3 , and Be, Mg,
Ca, Sr, Ba, and Pb hexaniobates was studied by heating the
salts and plotting the loss of water, and by dehydration over
concd. H_2SO_4 . The existing ideas regarding the structures
of the niobates (C.A. 31, 332*) do not seem to be correct.
Five to six H_2O mols. are probably connected with the
aquapolyniobate nuclei, and participate actively in their
structure. The last 1-2 mols. of H_2O must be especially
important in the formation of the niobate-water complexes.
W. M. Sternberg

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PM

Spitsyn, Vikt. I

✓ Chemistry of rare elements. A. V. Novoselova and
Vikt. I. Spitsyn. *Uchenye Zapiski, Moskov. Gosudarst.
Univ. Ser. Khim. Nauki* No. 174, 157-70(1955)—A
historical review of the work done at M. V. Lomonosov
Univ. (Moscow), principally on the compds. of W, Be, V,
Nb, Ta, and Ti. 73 references. C. H. Fuchsman

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SPITSYN, VIKT. I.
USSR/Inorganic Chemistry - Complex Compounds

C.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4108

Author : ~~SPITSYN, VIKT. I.~~ Kolli, I.D.

Title : Investigation of the Process of Dehydration and Thermal
Decomposition of Potassium Silicotungstate

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 3, 445-459

Abstract : To study the isobaric and isothermal dehydration of the
hydrates of 4-substituted silicotungstate of potassium
(I) use was made of quartz spiral balance. The existen-
ce of hydrates containing 10, 5, 1.5, 1.25 and 0.5 H₂O
was ascertained. Most strongly are retained 0.5-1
mole H₂O. With such a degree of dehydration the salt
adds reversibly 8 moles of H₂O. Final dehydration and
complete decomposition of the salt occur at 500°. Results of
tensimetric investigation are in agreement with the data on
dehydration on the quartz balance. Thermal analysis of I reveals 4
endothermal effects

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SPITSYN, VIKT. I.

USSR/Inorganic Chemistry - Complex Compounds

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4109

Author : Kolli, I.D., Pirogova, G.N., Spitsyn Vikt. I.
Title : Dehydration of Sodium Metatungstate

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 3, 470-477

Abstract : Dehydration of sodium metatungstate (I) was investigated by several procedures: on a quartz balance; by Van Bemmelen's method in desiccators over sulfuric acid of different concentration; on continuous operation balance by heating in the air at different temperatures. Ascertained was the existence of hydrates containing per 1 mole of $\text{Na}_2\text{O} \cdot 4\text{WO}_3$, 10, 4.5, 2.5, 2, 1.5 and 0.2-0.3 H_2O .

Determined were the temperature conditions of the existence of hydrates and water vapor tensions during their dissociation. All the hydrates are soluble in water; after a complete dehydration I is no longer soluble in water.

Card 1/2

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USSR/Inorganic Chemistry - Complex Compounds

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4109

Over concentrated H_2SO_4 , I forms a 2-hydrate, 9.8 moles of H_2O being removed reversibly and 0.2 mole irreversibly. Most strongly are retained 0.2-0.3 mole H_2O ; calculated on the basis of the coordination formula

$\text{Na}_6\text{H}_4 [\text{H}_2(\text{WO}_3)_6]$ this quantity amounts to 0.6-0.9 mole.

Complete dehydration takes place at 280° .

Card 2/2

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SPITSYN VIKT. I.

SPITSYN V.I.

USSR/Inorganic Chemistry. Complex Compounds.

Abs Jour : Referat. Zhurnal Khimiya. No 6, 1957, 1884.

Author : V.A. Pchelkin, A.V. Lepitskiy, V.I. Spitsyn

Inst :

Title : Study of Isotopic Interchange Among Salts of Niobic Acid of Various Types.

Orig Pub : Zh. Neorgan. Khimii, 1956, 1, No 4, 341-851.

Abstract : Using Nb^{95} , the isotopic interchange in the heterogeneous system of $K_{14}Nb_{12}O_{37} \cdot 27H_2O$ (I) and $KNbO_3 \cdot 2H_2O$ at 20° was studied. The interchange between the precipitates I and II and saturated solutions of I and II occurs practically instantly in the amount of 60% and does not increase further in the course of time. The solubility of I in the saturated solution of II is 0.0423 g/ml at 20° . Taking into consideration the constancy of the refraction indices of the initial niobates and of the bottom phases, the authors conclude that I and II do not interact one

Card 1/3

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SPITSYN, V.I.

✓ Electrochemical method for the preparation of heteropoly compounds. ⁷ V. I. Spitsyn and K. G. Koneva. Zhur. fizorg. Khim. 1, 941-51 (1958).—A method based on electrolysis is described for synthesizing heteropoly compds. which reduces the no. of operations to a min. and which can be used to prep. radioactive samples. Thus, trisubstituted Na phosphotungstate (I) or phosphomolybdate are formed in the anode region of the electrolyzer from a mixt. of the normal salt (Na_2WO_4 or Na_2MoO_4) and H_3PO_4 at a pH of 2.5-2.0. The yield in soln. is 60-5% and in cryst. form

60-5%. The free acids can also be prepd. at $\text{pH} \approx 1$. The effect of c.d., temp., and P/W ratio on the formation of I was studied. An increase in the c.d. increases the rate of formation of I but it has no effect on the compn. of the final product. An increase in temp. causes a partial hydrolysis of I, and an increase in the P/W ratio leads to the formation of a mixt. of satd. and unsatd. heteropoly compds.
I. Roytar Leach

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Spitsyn I. I.

USSR/Inorganic Chemistry - Complex Compounds.

C.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30328

Author : Spitsyn Vikt. I., Lapitskiy, A.V.

Inst :
Title : Thermographic Study of the Process of Interaction of
Niobium Pentoxide with Caustic Soda.

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 8, 1771-1775

Abst : By a thermographic study of mixtures of Nb_2O_5 (I) and NaOH (II), taken in different proportions by weight, it was ascertained that I reacts with II at 130 to form Na_3NbO_5 (III), which is present in the alkali melt in equilibrium with the excess of II. It is shown that the niobates: $NaNbO_3 \cdot 3.5H_2O$, $Na_{1/4}Nb_{1/4}O_{37} \cdot 32H_2O$ (IV) and $NaNbO_3$ interact at above 100° with II to form III. Thus III is formed in melts containing excess II. The authors assume that the process of interaction of Na-niobates with II takes place with a slight exothermic effect but the latter is masked by the endothermic effect of the

Card 1/2

USSR/Inorganic Chemistry - Complex Compounds.

C.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30329

Author : Lapitskiy, A.V., Spitsyn Vikt.I., Pchelkin, V.A.,
Simanov, Yu.P.

Inst :
Title : Thermographic and Roentgenographic Study of the Process
of Dehydration of the Niobates of Sodium and Potassium.

Orig Pub : Zh. neorgan. khimii, 1956, 1, No 8, 1776-1783

Abst : Study of the process of dehydration of hexa- and metaniobates: $\text{Na}_{1/4}\text{Nb}_{1/2}\text{O}_{3/2} \cdot 3.32\text{H}_2\text{O}$ (I), $\text{K}_{1/4}\text{Nb}_{1/2}\text{O}_{3/2} \cdot 2.27\text{H}_2\text{O}$ (II), $\text{NaNbO}_3 \cdot 3.5\text{H}_2\text{O}$ (III) and $\text{KNbO}_3 \cdot 2\text{H}_2\text{O}$ (IV), by means of a continuous operation balance, a McBain balance and a Kurnakov pyrometer. The existence of the following hydrates was confirmed: of I with 6, 4 and 2 molecules of H_2O , in the respective temperature ranges, 80-115°,

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USSR/Inorganic Chemistry - Complex Compounds.

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Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 30329

200-225° and 300-320°; of II with 9 (?), 6, 4 and 2 molecules of H_2O , the region of stability of the noni-hydrate being very limited, while the other hydrates were detected at 120, 180 and 300-350°, respectively; of III with 1 molecule of H_2O at 80°, and with 0.5 H_2O in the range 100-120°; of IV with 0.36 and with 0.2 H_2O , at 100 and 160°, respectively. Roentgenograms of I, II, III and IV show a large number of lines. The intermediate hydrates formed during dehydration differ, in their crystalline form, from the initial salts and are characterized by fine dispersion. After complete dehydration of I, II, III and IV, the roentgenograms show the sharp lines of anhydrous $NaNbO_3$ and $KNbO_3$.

Card 2/2

PCHELKIN, V.A.; LAPITSKIY, A.V.; SPITSYN, Vikt.I.; SIMANOV, Yu.P.

Thermography and radiography of the dehydration of hexaniobates
of certain bivalent metals. Zhur.neorg.khim. 1 no.8:1784-1793
Ag '56. (MLRA 9:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova,
Kafedra neorganicheskoy khimii.
(Dehydration) (Niobates)

SPITSYN, Vikt.I.; TORCHENKOVA, Ye.A.

Study of the conversions of p-tungstate ion in solutions with the aid of a mixed sodium-cesium salt. Zhur.neorg.khim. 1 no.8:1794-1797 Ag '56. (MLRA 9:11)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova, Laboratoriya neorganichiskoy khimii. (Tungstates)

SPITSYN, V. I.

✓ 391. Use of disodium ethylenediaminetetraacetate (Tilon B) in the emanation determination of radium.
V. I. Spitsyn, K. B. Zaborenko and S. A. Bresikov.
Zhur. Neorg. Khim., 1958, 1 (9), 2160-2163;
Ref. Zhur. Khim., 1957, Abstr. No. 41,447.—For
the determination of Ra in ores, to the acid soln.
(5% HCl) obtained after decomposition of the ore
and removal of silicic acid, add 50 mg of BaCl₂,
heat to boiling-point, precipitate BaSO₄ and RaSO₄,
with excess of 10% H₂SO₄, boil for several min.,
keep for 30 min. on a water bath and set aside for
10 to 12 hr. Centrifuge off the sulphate ppt.,
wash it with water acidified with HCl, and repeat
the pptn. of Ba and Ra from the filtrate. To
each ppt. add 6 or 7 ml. of a hot soln. containing
10% EDTA (disodium salt) and 10% Na₂CO₃, stir
vigorously and set aside on the boiling-water bath
till the ppt. has completely dissolved. Transfer the
soln. to a bubbler and determine Ra by the emanation
method. Small quantities of SiO₂, Fe⁺⁺,
Al⁺⁺, Cl⁻, SO₄²⁻ and PO₄³⁻ do not interfere in the
determination of Ra. The time for the analysis is
considerably shortened. C. D. Kopkin

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Spitsyn, V.I.

Chem The dehydration and the thermal decomposition of lithium silicotungstate. V. I. Spitsyn and I. D. Kolli (M. V. Lomonosov State Univ., Moscow). *Zhur. Neorg. Khim.* 1, 2403-8 (1956).—The isobaric dehydration of $\text{Li}_4\text{H}_2[\text{Si}(\text{W}_2\text{O}_7)_4] \cdot 14.5\text{H}_2\text{O}$ (I) was studied for the temp. range 20–600°. Existence of hydrates contg. 28, 16, 7, and 4 mols. H_2O and the possible existence of hydrates contg. 8, 1.5, and 0.5 mole H_2O was established. Heating I to 180° causes no significant decompn. The final dehydration of I, which occurs at 480°, is accompanied by decompn. Thermographic study revealed endothermal effects in the temp. range 20–130° and at 200, 300, 400, and 600°. They are due to separate stages of the dehydration. An exothermal effect was observed at 560° that is related to changes in the crystal structure of the decompn. products or their chem. interaction. J. Roulet Leach

Spitsyn, V.I.

Reaction mechanism for preparing phosphotungstates.
V. I. Spitsyn and K. G. Koneva. *Zhur. Neorg. Khim.* 1, 2488-803 (1958).—The electrochem. method of prep. heteropoly compds. in conjunction with the method of radioactive indicators was used to det. the compn. of the products which are formed during the gradual oxidation of a mixt. of a normal tungstate and sodium phosphate. The reaction between Na_2WO_4 and the phosphate ions can be observed first at a pH 7.5–7.0. In the first stages compn. of the type of unsatd. heteropoly compds. or their double salts with Na_2WO_4 are formed. The compn. of the substances depends upon the pH of the soln. For a pH < 2.3 a phosphotungstate of the satd. series (P:W = 1:12) is formed. There is no formation of the para-(pH 8–6) and of the meta-(pH 4–2) tungstate in the solns. The aquo-polytungstates do not react directly with the phosphate ions. The reaction which leads to the formation of the heteropoly compds. takes place in this case only upon the oxidation of the soln. Metatungstic acid reacts with phosphate ions at a pH = 1 to form phosphotungstic acid.
I. Rovtar Leach

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SPITSYN, V. I.

Isotope exchange of hydrogen between bound water and some heteropoly compounds in heavy water, containing deuterium. ²⁷V. I. Spitsyn and V. F. Berezkina. Zhur. Neorg. Khim. 1, 2032-6 (1968). — H interchange between $2.64\text{Na}_2\text{O} \cdot \text{P}_2\text{O}_5 \cdot 23.60\text{WO}_3 \cdot 32.98\text{H}_2\text{O}$ (I) and heavy water (contg. D) was measured at 20° and at 99°. The decline in d. of the heavy water was measured after one hr's contact with I and multiple distn. of the resulting solus. At 20° with 2.0-2.5 g. of I and 7.9-9.1 g. of heavy water (d. = 1.000783 to 1.000808), the computed interchange was equal to 33.9 ± 1.5 moles; this indicates free exchange and no noticeably strong ties of the bound water. At 99°, however, the fact that only 27.0 ± 1.7 moles were exchanged suggests that the partially dehydrated salt formed at the higher temp. holds onto its water more strongly than does I. C. H. Fuchsman

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SAVICH, I.A.; PIKAYEV, A.K.; LEBEDEV, I.A.; SPITSYN, Viktor I.

Complex compounds of hexavalent uranium with certain organic substances.
Part 1: Internal complex compounds of uranium with certain Schiff bases.
Zhur, neorg. khim. 1 no.12:2736-2741 D '56. (MLRA 10:6)

1. Moskovskiy Gosudarstvennyy universitet imeni M.V. Lomonosova, Kafed-
ra neorganicheskoy khimii.
(Complex compounds) (Uranyl compounds) (Schiff bases)

SAVICH, I.A.; PIKAYEV, A.K.; RYKOV, A.G.; SPITSYN, Viktor I.

Complex compounds of hexavalent uranium with certain organic substances. Part 2: Internal complex salts of the uranyl ion with certain derivatives of 2-naphthol and 1,2-naphthoquinone. Zhur. neorg. khim. 1 no. 12: 2742-2745 D. '56. (MLRA 10:6)

1. Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova, Kafedra neorganicheskoy khimii.
(Complex compounds) (Uranyl salts) (Naphthol)

SPITSYN, V. I., SAVICH, I. A., RYKOV, A. G., and PIKAYEV, A. K.

"Complex Compounds of Hexavalent Uranium With Some Organic Substances; Part 3 -- Precipitation of Uranium From Aqueous Solutions by Means of Some Substances Related to 1-Nitroso-2-Naphthol," by I. A. Savich, A. K. Pikayev, A. G. Rykov, and V. I. Spitsyn, Moscow State University, Zhurnal Neorganicheskoy Khimii, Vol 1, No 12, Dec 56, pp 2746-2748

It has been established that 3-bromo-1,2-naphthoquinonemonoxime-1 can be used as a precipitant for uranium. The precipitation of uranium with this reagent is complete and takes place at $pH = 2.7$. It has furthermore been established that 3,4-dichloro-1,2-naphthoquinonemonoxime-1 cannot be used as a reagent for the precipitation of uranium.

Sum 1258

~~SPITSYN, V.I.; KAPUSTINSKIY, A.F.; KOZLOV, V.V., doktor khimicheskikh nauk.~~

Hungarian chemical congress. Izv.AN SSSR.Otd.khim.nauk no.5:635-640
My '56. (MIRA 9:9)

1.Chlen-korrespondent AN SSSR (for Spitsyn, Kapustinskiy).
(Hungary--Chemistry--Congresses)

SAVICH, I.A.; PIKAYEV, A.K.; LEBEDEV, I.A.; SPITSYN, Vikt.I.

Synthesis of the series of Schiff bases formed from aromatic
o-oxyaldehydes and heterocyclic amines. Vest.Mosk.un. Ser.mat.,
mekh.,astron.,fiz.,khim.11 no.1:225-231 '56. (MIRA 10:12)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.
(Aldehydes) (Bases (Chemistry)) (Amines)

SPITSYN VIKT. I.

SAVICH, I.A.; ZELENTSOV, V.V.; SPITSYN, Vikt.I.

Synthesis of the series of Schiff bases formed from 2-oxy-1-naphtaldehyde and certain amines. Vest.Mosk.un. Ser.mat., mekh.,astron.,fiz.,khim.11 no.1:233-237 '56. (MIRA 10:12)

1. Kafedra neorganicheskoy khimii Moskovskogo universiteta.
(Naphtaldehyde) (Bases (Chemistry)) (Amines)

SPITSYN V.I.
TOPCHYEVA, K.V.; PESHKOVA, V.M.; SHAKHOVA, Z.F.; ALIMARIN, I.P.; NOVOSELOVA,
A.V.; SPITSYN, V.I.; LUTSENKO, I.F.; GERASIMOV, Ya.I.; NESMEYANOV,
A.N.; TERENT'YEV, A.P.; POTAPOV, V.M.; GIBALO, I.M.

E.S. Przheval'skii; obituary. Vest. Mosk. un. Ser. mat. mekh., astron.,
fiz., khim. 11 no.2:205-207 '56. (MIRA 10:12)
(Przheval'skii, Evgenii Stepanovich, 1879-1956)

SPITSYN, V. I.

719
A combined α -spectrometer M. P. Glazunov and V. I. Spitsyn. *Izv. Akad. Nauk S.S.S.R., Ser. Fiz.* 20: 1493-6 (1966). The spectrometer is a combination of a ketron (cf. C.A. 45, 459g) and an elotron (cf. C.A. 48, 2485g). The focussing was obtained by means of a non-uniform magnetic field decreasing in the radial direction. The construction of the chamber and the counters is described. The half-width of conversion and photoelectron lines is 0.8%. The half-width of the line obtained from Compton electrons is 2-2.5%. The app. was calibrated for conversion and photoelectrons with K and L conversion electron lines of Cs^{137} and for Compton electrons with Co^{60} and Cs^{137} γ -rays. S. Pakswar

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SPITSYN VIKT. I

USSR/Inorganic Chemistry. Complex Compounds.

Abs Jour : Referat. Zhurnal Khimiya No 6 1957, 18824
 Author : Vikt. I Spitsyn, N.N. Shavrova.
 Inst :
 Title : Study of Hydrous Sodium Tantalates
 Orig Pub : Zh.Obshch.Khimii. 1956, 26, No 5, 1258 - 1262

Abstract : Sodium tantalates were obtained by combining Ta_2O_5 (I) with NaOH (II) in the weight ratio I : II = 1 : 5. The fused mass having been washed with water in order to remove the superfluous II was dissolved in water heated to 80° ; the obtained solution was evaporated at 50° until the crystallization started. Under these conditions, $8Na_2O \cdot 6Ta_2O_5 \cdot 33H_2O$ (III) was separated in the form of hexagonal plates with unequal sides. When 0.1 of the normal solution of II was added to the initial mass at a low temperature, a precipitate of $7Na_2O \cdot 5Ta_2O_5 \cdot 22H_2O$ (IV) was separated; this precipitate consists of very little needle crystals of a

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Abs Jour : Referat. Zhurnal Khimiya No 6, 1957, 18824

prismatic shape. IV was obtained also by evaporating the aqueous solution of the initial fused mass at a temperature above 85° , but in prisms of a larger size. d^{20}_D (3.58 and 3.78), refraction indices, pH of 1% solutions (8.58 and 8.48) were determined for III and IV. The interplanar spacing of III and IV is quoted. The authors arrive to the conclusion that it is possible to obtain two different compounds - III and IV - from the aqueous solution of I combined with II, depending on the concentration of the superfluous II and temperature.

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SPITSYN VIKT. I

USSR/Inorganic Chemistry. Complex Compounds.

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SPITSYN, V. I.

The mechanism of the reaction of tantalum pentoxide
with sodium hydroxide. V. I. Spitsyn and N. N. Shavryva.
J. Gen. Chem. (U.S.S.R.) 26, 1420-22 (1956) (English trans-
lation).—See C.A. 51, 119c. B. M. R.

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SPITSYN, V. I.

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Transformations of sodium phosphotungstate under the influence of sodium hydroxide. V. I. Spitsyn and E. A. Fabrikova. *Proc. Acad. Sci. U.S.S.R. Chem. Sect.* 106, Nos. 1-8, 27-30 (1956) (English translation); *Doklady Akad. Nauk S.S.S.R.* 106, 84-7 (1958).—Addn. of small amts. of NaOH to a Na phosphotungstate soln. is said to cause partial decompn. of the satd. salt with the formation of phospho-9-tungstate and the normal sodium tungstate. These last two compds then react to form a double or complex salt: $\text{Na}_4(\text{PW}_{12}\text{O}_{40}) \cdot 14\text{H}_2\text{O} + 6\text{NaOH} + 4\text{H}_2\text{O} \rightleftharpoons \text{Na}_4(\text{PW}_{12}\text{O}_{40}) \cdot 3\text{Na}_2\text{WO}_4 \cdot 21\text{H}_2\text{O}$. It is suggested that the double salt may be an intermediate product in the formation of the satd. salt. Otto H. Johnson

for ams